

5 What is claimed is:

1. A lead electrode assembly for use with an implantable cardioverter-defibrillator subcutaneously implanted outside a patient's ribcage between the third and twelfth ribs, wherein the lead electrode assembly comprises an electrode.

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2. The lead electrode assembly of claim 1, wherein the electrode can emit an effective energy for shocking the patient's heart.

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3. The lead electrode assembly of claim 2, wherein the effective energy for shocking the patient's heart is approximately .5 J to approximately 350 J.

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4. The lead electrode assembly of claim 3, wherein the effective energy for shocking the patient's heart is approximately .5 J to approximately 25 J.

5 5. The lead electrode assembly of claim 3, wherein the
effective energy for shocking the patient's heart is
approximately 150 J to approximately 200 J.

6. The lead electrode assembly of claim 3, wherein the
10 effective energy for shocking the patient's heart is
approximately 200 J to approximately 250 J.

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15 7. The lead electrode assembly of claim 3, wherein the
effective energy for shocking the patient's heart is
approximately 250 J to approximately 300 J.

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20 8. The lead electrode assembly of claim 3, wherein the
effective energy for shocking the patient's heart is
approximately 300 J to approximately 350 J.

9. The lead electrode assembly of claim 1, wherein the
electrode is between approximately 100 square millimeters to
approximately 5000 square millimeters in area.

5 10. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 1000 square millimeters to
approximately 1500 square millimeters in area.

11. The lead electrode assembly of claim 9, wherein the
10 electrode is between approximately 1500 square millimeters to
approximately 2000 square millimeters in area.

12. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 2000 square millimeters to
15 approximately 2500 square millimeters in area.

13. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 2500 square millimeters to
approximately 3000 square millimeters in area.

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14. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 3000 square millimeters to
approximately 3500 square millimeters in area.

5 15. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 3500 square millimeters to
approximately 4000 square millimeters in area.

10 16. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 4000 square millimeters to
approximately 4500 square millimeters in area.

15 17. The lead electrode assembly of claim 9, wherein the
electrode is between approximately 4500 square millimeters to
approximately 5000 square millimeters in area.

20 18. An implantable cardioverter-defibrillator for
subcutaneous positioning between the third rib and the twelfth
rib within a patient, the implantable cardioverter-
defibrillator comprising:

a housing;

an electrical circuit located within the housing;

a first electrode coupled to the electrical circuit
and located on the housing; and

5 a lead electrode assembly coupled to the housing,
wherein the lead electrode assembly comprises:

 a second electrode coupled to the electrical
circuit.

10 19. The implantable cardioverter-defibrillator of claim 18,
wherein the second electrode can emit an effective energy for
shocking the patient's heart.

15 20. The implantable cardioverter-defibrillator of claim 19,
wherein the effective energy for shocking the patient's heart
is approximately .5 J to approximately 350 J.

20 21. The implantable cardioverter-defibrillator of claim 20,
wherein the effective energy for shocking the patient20 heart
is approximately .5 J to approximately 25 J.

5 22. The implantable cardioverter-defibrillator of claim 20,
wherein the effective energy for shocking the patient's heart
is approximately 150 J to approximately 200 J.

10 23. The lead electrode assembly of claim 20, wherein the
effective energy for shocking the patient's heart is
approximately 200 J to approximately 250 J.

15 24. The lead electrode assembly of claim 20, wherein the
effective energy for shocking the patient's heart is
approximately 250 J to approximately 300 J.

20 25. The lead electrode assembly of claim 20, wherein the
effective energy for shocking the patient's heart is
approximately 300 J to approximately 350 J.

26. The implantable cardioverter-defibrillator of claim 18,
wherein the second electrode is between approximately 100
square millimeters to approximately 5000 square millimeters in
area.

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27. The implantable cardioverter-defibrillator of claim 26, wherein the second electrode is between approximately 1000 square millimeters to approximately 1500 square millimeters in area.

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28. The implantable cardioverter-defibrillator of claim 26, wherein the second electrode is between approximately 1500 square millimeters to approximately 2000 square millimeters in area.

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29. The implantable cardioverter-defibrillator of claim 26, wherein the second electrode is between approximately 2000 square millimeters to approximately 2500 square millimeters in area.

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30. The implantable cardioverter-defibrillator of claim 26, wherein the second electrode is between approximately 2500 square millimeters to approximately 3000 square millimeters in area.

5 31. The implantable cardioverter-defibrillator of claim 26,
wherein the second electrode is between approximately 3000
square millimeters to approximately 3500 square millimeters in
area.

10 32. The implantable cardioverter-defibrillator of claim 26,
wherein the second electrode is between approximately 3500
square millimeters to approximately 4000 square millimeters in
area.

15 33. The implantable cardioverter-defibrillator of claim 26,
wherein the second electrode is between approximately 4000
square millimeters to approximately 4500 square millimeters in
area.

20 34. The implantable cardioverter-defibrillator of claim 26,
wherein the second electrode is between approximately 4500
square millimeters to approximately 5000 square millimeters in
area.

35. An implantable cardioverter-defibrillator for
25 subcutaneous positioning between the third rib and the twelfth

5 rib within a patient, the implantable cardioverter-
defibrillator comprising:

a housing; and

a lead electrode assembly coupled to the housing,

wherein the lead electrode assembly comprises:

10 an electrode.

36. The implantable cardioverter-defibrillator of claim 35,
wherein the electrode can emit an effective energy for
shocking the patient's heart.

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37. The implantable cardioverter-defibrillator of claim 36,
wherein the effective energy for shocking the patient's heart
is approximately .5 J to approximately 350 J.

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38. The implantable cardioverter-defibrillator of claim 37,
wherein the effective energy for shocking the patient's heart
is approximately .5 J to approximately 25 J.

5 39. The implantable cardioverter-defibrillator of claim 37,
wherein the effective energy for shocking the patient's heart
is approximately 150 J to approximately 200 J.

10 40. The implantable cardioverter-defibrillator of claim 37,
wherein the effective energy for shocking the patient's heart
is approximately 200 J to approximately 250 J.

15 41. The implantable cardioverter-defibrillator of claim 37,
wherein the effective energy for shocking the patient's heart
is approximately 250 J to approximately 300 J.

20 42. The implantable cardioverter-defibrillator of claim 37,
wherein the effective energy for shocking the patient's heart
is approximately 300 J to approximately 350 J.

43. The implantable cardioverter-defibrillator of claim 35,
wherein the electrode is between approximately 100 square
millimeters to approximately 5000 square millimeters in area.

5 44. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 1000 square
millimeters to approximately 1500 square millimeters in area.

10 45. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 1500 square
millimeters to approximately 2000 square millimeters in area.

15 46. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 2000 square
millimeters to approximately 2500 square millimeters in area.

20 47. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 2500 square
millimeters to approximately 3000 square millimeters in area.

20 48. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 3000 square
millimeters to approximately 3500 square millimeters in area.

5 49. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 3500 square
millimeters to approximately 4000 square millimeters in area.

50. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 4000 square
10 millimeters to approximately 4500 square millimeters in area.

51. The implantable cardioverter-defibrillator of claim 43,
wherein the electrode is between approximately 4500 square
millimeters to approximately 5000 square millimeters in area.

52. The implantable cardioverter-defibrillator of claim 35,
15 wherein the implantable cardioverter-defibrillator is
positioned subcutaneously between the third and fifth ribs.

53. The implantable cardioverter-defibrillator of claim 35,
wherein the implantable cardioverter-defibrillator is
positioned subcutaneously between the fourth and sixth ribs.

20 54. The implantable cardioverter-defibrillator of claim 35,
wherein the implantable cardioverter-defibrillator is
positioned subcutaneously between the sixth and eighth ribs.

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55. The implantable cardioverter-defibrillator of claim 35,
wherein the implantable cardioverter-defibrillator is
positioned subcutaneously between the eighth and tenth ribs.

56. The implantable cardioverter-defibrillator of claim 35,
10 wherein the implantable cardioverter-defibrillator is
positioned subcutaneously between the tenth and twelfth ribs

57. The implantable cardioverter-defibrillator of claim 35,
wherein the implantable cardioverter-defibrillator provides
anti-tachycardia pacing energy to the heart for treatment of
15 atrial fibrillation.

58. The implantable cardioverter-defibrillator of claim 35,
wherein the implantable cardioverter-defibrillator provides
anti-tachycardia pacing energy to the heart for treatment of
ventricular tachycardia.

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